PUBLIC HEALTH SERVICE IN THE UNITED STATES

BY

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Surgeon-General U. S. Marine Hospital Service

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MR. PRESIDENT and Gentlemen of the Cleveland Medical Society: In April last a note was received from the Minister of Belgium at Washington, asking for certain information concerning the health service of the United States, and inclosing the following specific inquiries:

1st. What are the attributes of the National Board of Health at Washington?

2d. Are there any general laws for the whole Union relative to the prevention of epidemic diseases, formulating a uniform plan to be followed by the states? Or do the federal states remain absolutely independent in this matter?

3d. Do quarantine doctors belong to a federal ministry, or are they simply officers taken (relevant) from the federal states having maritime ports?

4th. Is there any difference—and if so, what is it?—between "Naval Hospitals" and "Hospitals of the Marine Hospital Service?"

5th. Are there any general sanitary regulations applicable to the whole Union concerning contagious diseases of animals, and established not only in regard to exportation, but also with regard to the development of agriculture and interstate commerce?

6th. Are there any general regulations for the whole Union relative to commerce, manufactures and the adulteration of food commodities?

7th. What are the relations existing between the sanitary or medical officers of the Union and those of the different federal states?

The following are the replies sent to these inquiries:

1st. "What are the attributes of the National Board of Health at Washington?"

There is no National Board of Health so called. A National Board of Health was created by act of Congress, approved March 3, 1879. Another act was approved June 2, 1879, clothing the Board with certain quarantine powers, but this last act was limited to a period of four years, at the expiration of which time Congress declined to renew it. The National Board of Health, therefore, had an active existence from 1879 to 1883. The act establishing the Board, March 3, 1879, remained upon the statute books until February 15, 1893, when it was formally repealed by Congress,

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but the operations of the Board were confined to the four years above mentioned—1879 to 1883. The principal functions of the National Board of Health are now administered by the Marine Hospital Service, whose duties will be enumerated in another portion of this report.

2d. "Are there any general laws for the whole Union relative to the prevention of epidemic diseases, formulating a uniform plan to be followed by the states, or do the federal states remain absolutely independent in this matter?"

The act of Congress approved February 15, 1893, provides for the formulating of uniform regulations to be observed by all state and local quarantine authorities in preventing the introduction from foreign countries of epidemic diseases, and for preventing the spread of epidemic diseases from one state or territory into another. The regulations are promulgated by the Secretary of the Treasury, and the Surgeon-General of the Marine Hospital Service is charged, under the direction of the Secretary, with the performance of all the duties in respect to quarantine, and quarantine regulations, which are provided for by said act. The law further provides that if the states or municipalities shall fail or refuse to execute the quarantine regulations, the President shall appoint a proper person to execute them.

3d. "Do quarantine doctors belong to a federal ministry, or are they simply officers taken from the federal states having quarantine ports?"

There are two classes of quarantine physicians. First, those commissioned by the national (federal) government; second, those commissioned by state governments. The quarantine physicians employed by the national government are the medical officers of the Marine Hospital Service. The national government has the conduct of twelve fully equipped quarantine stations, and maintains, moreover, quarantine inspection at seven ports. At the remaining quarantine stations of the United States quarantine physicians are appointed by state or municipal authority. These latter, however, are all subject to inspection by the Marine Hospital Service.

4th. "Is there any difference—if so, what is it?—between naval hospitals and hospitals of the Marine Hospital Service?"

Yes. Naval hospitals are hospitals provided by the national government exclusively for the treatment of sailors belonging to the United States navy, while marine hospitals are administered by the Marine Hospital Service, a bureau of the treasury department, for the treatment of seamen employed in the merchant marine of the United States.

5th. "Are there any general sanitary regulations applicable to the whole Union, concerning contagious diseases of animals, and established not only in regard to exportation, but also with regard to the development of agriculture and interstate commerce?"

The Bureau of Animal Industry in the Department of Agriculture makes investigations as to the existence of contagious pleuropneumonia and other dangerous communicable diseases of live-stock; superintends the

measures for their extirpation, makes original investigations as to the nature and prevention of such diseases, and reports on the condition and means of improving the animal industries of the country. It also has charge of the inspection of import and export animals, of the inspection of vessels for the transportation of export cattle, and of the quarantine stations for imported neat cattle; supervises the interstate movement of cattle, and inspects live-stock and their products slaughtered for home consumption.

6th. "Are there any general regulations for the whole Union relative to commerce, manufactures, and the adulteration of food commodities?"

There are many general regulations for the whole Union relative to commerce. The interstate quarantine regulations, promulgated under the act of February 15, 1893, are based upon the constitutional right of the national government to regulate commerce. Practically, it may be said that there are no national health regulations concerning the adulteration of food commodities, or concerning manufactures. These matters are subjects of careful legislation by the different state governments.

7th. "What are the relations existing between the sanitary or medical officers of the Union and those of the different states?"

The relations between the national and local *quarantine* authorities have been explained in answer to previous questions. Each state has its own health laws and organization, and each city its own health board; and, in general, it may be said that municipal and domestic sanitation is left entirely to the state or local health authorities without interference by the national government. I quote an editorial of the *New York Times*, of August 2, 1893, showing the general sentiment concerning the proper relation between the national and state governments in the matter of public health:

The sanitary condition of cities and towns, and the control of the influences which affect the health of the people are matters that come very distinctly within the police power of the States. Regulations and restrictions for the protection of the public health can be best established and administered by State and local authorities, and the nearer their administration comes to the people affected the better. The subject may be neglected in some States, or they may be slow in appreciating its importance and providing for the sanitary well-being of their people, but that fact does not impair their authority or transfer it elsewhere. They may be dilatory or negligent in many things that the national government cannot look after for them.

When it comes to dealing with contagious diseases brought from other countries the matter takes a different aspect. The enforcement of measures for preventing their introduction at our seaports or over our borders necessarily involves interference with foreign commerce. Vessels have to be detained, inspected, and disinfected, and passengers and merchandise have to be subject to regulations that concern the people and the interests of the country, regardless of State lines. National jurisdiction has here an appropriate field and is alone adequate to its requirements. Quarantine regulations affecting communication with foreign countries should be national and

national only. The same principle may apply in some degree to protection against the transmission of infectious diseases from one State to another through the agencies employed in interstate traffic, as interference with those agencies pertains to the regulation of commerce between the several States. But there is seldom any occasion for interference in the case of infections originating in this country.

There might be a useful function for a national board of health in the collection and diffusion of statistics and information relating to matters that concern the public health, and in consulting and advising with State and local authorities. But no power or jurisdiction could be exercised by such a board, by whatever name it might be called, over those authorities, and it could in no way deal practically with internal sanitation.

MARINE HOSPITAL SERVICE

The function of the Marine Hospital Service may be seen by an enumeration of the various duties of its officers, as follows:

1. The management of hospitals and relief stations for the care of sick and disabled seamen of the merchant marine of the United States, over 50,000 seamen being treated annually.
2. The active management of twelve national quarantine stations, including the steam vessels belonging thereto. These national quarantine stations, particularly in the South, are the refuge stations for neighboring local quarantines, and for a large number of years have done the greater part of the actual cleansing and disinfecting of infected vessels. In the last fifteen years their hospitals have, with but few exceptions, received and cared for all the yellow-fever patients taken from vessels entering United States ports.
3. Inspection of local quarantines, under the act of February 15, 1893.
4. Investigation of reported cases of epidemic disease, including bacteriologic examinations and local sanitary conditions.
5. The suppression of epidemic diseases and enforcement of the interstate quarantine regulations.
6. The collection and dissemination of mortality statistics and sanitary information.
7. Scientific investigation into the causes of disease.
8. The examination of pilots for color-blindness.
9. Physical examination of keepers and crews of the life-saving stations; professional examination of their claims on account of disability and their treatment in hospital.
10. Physical examination and treatment of the officers and crews of the Revenue-Cutter Service, both prior and subsequent to enlistment, and medical and surgical service under special detail on revenue cutters engaged in Arctic cruising, or on other long voyages.
11. Physical examination of immigrants under the law excluding those afflicted with contagious disease.
12. Service in the office of consuls at foreign ports to assure the accuracy of bills of health given to vessels.
13. Miscellaneous duties imposed from time to time by the Treasury Department.

QUARANTINE LAW THE FOUNDATION OF NATIONAL PUBLIC HEALTH SERVICE

From the above it will be seen that the foundation of a national public health service, as it has heretofore existed in the United States, and as it exists today, is in quarantine law. The act of June 2, 1879, investing the National Board of Health with certain quarantine powers, and making quarantine appropriation, was limited to four years' operation, and was not re-enacted. The act of March 3, 1879, establishing the board, defined its duties to be those pertaining to quarantine and to obtain information and to advise upon all matters affecting the public health, but in the Sundry Civil Act for the fiscal year ended June 30, 1883, Congress specially restricted the duties and investigations of the board to cholera, small-pox and yellow fever.

ADVANCE IN SCIENTIFIC QUARANTINE

Comparing the present quarantine law of February 15, 1893, with the quarantine law to be operated by the National Board of Health, it may be said that the present one is by far more powerful and efficient. The quarantine service of the United States is today almost strictly national, and, notwithstanding local sentiment in certain states to the contrary, the time is near when all quarantine administration will be strictly national. The development of a public health service out of quarantine seems to be a natural sequence, particularly when the scientific and progressive character of modern quarantine is considered. Quarantine is today as much in advance of the original quarantine established in Venice at the beginning of the fifteenth century as is the practice of medicine in advance of that date. The colonies of America established quarantine before the Union was established, and it was a more rational quarantine than the Venetian. More recently the States and municipalities established quarantine laws and practice which were in advance of those of the colonies, but while their regulations were undoubtedly effective to a degree, in barring pestilential disease, many of the State and local quarantines degenerated into political institutions and became, as some of them still are, quarantines chiefly for political preference and for revenue. Some of the members of this Society may recall the number of quarantine conventions which were held before and subsequent to the civil war, to bring about uniformity of quarantine procedures between the several States, and may also recall the futility of these efforts. For years the cry had been for uniformity in quarantine practice, but no relief from the dangers of lack of uniformity was obtained until the passage of the act of February 15, 1893. Under this act there are maritime quarantine regulations for the whole United States, as well as interstate quarantine regulations, all of which, by the terms of the law, must be uniform in their operation so far as minimum requirements are concerned; but there

is nothing in the law to prevent useless and expensive requirements in addition to those of the Treasury Department. With a strictly national quarantine service these useless embargos upon commerce may be removed, and, as said before, the trend of public sentiment and of legislation is to that end. But scientific quarantine does not stop here. Earnest efforts to protect the United States from the invasion of foreign pestilence have demonstrated the necessity of so great watchfulness, such great expense, such a handicapping of commerce, that inquiry is now being urged by those directly interested, with regard to the conditions which give rise to our annual fears and necessitate these expenditures, and restrictions upon commerce. Nearly all these fears and precautions are rendered necessary by but two diseases—cholera and yellow fever. Without these, maritime quarantine would be but an inspection service, with occasional disinfection for typhus fever, plague, etc., and its restriction upon commerce would be practically nil. Therefore, a question engaging the public mind today is whether it would not be cheaper and safer, and prevent our annual perturbation of mind, if these two diseases were attacked in their habitats. Quarantine authorities are beginning to demand that conditions which favor the continuous propagation of cholera at its home in India should be removed; that its conveyance from India by pilgrims to Mecca and from Mecca to Egypt and the northern coast of Africa, and to the continent of Europe, should be prevented. And the same inquiry is being made with regard to yellow fever upon the western continent.

PROTEST AGAINST YELLOW FEVER PORTS

At the meeting of the American Public Health Association, held in Buffalo last October, the following resolutions were adopted:

"Whereas, Yellow fever is believed to be the most subtle and dangerous of all epidemic diseases, and

"Whereas, It is ordinarily conveyed into one country from an infected seaport of another, and

"Whereas, The continued and persistent presence of this disease in any seaport is believed to be unnecessary, and may be prevented by proper engineering and other sanitary measures; therefore,

"Resolved, 1st—That it is the duty of every government possessing seaports thus infected to institute such engineering and other sanitary measures as will remove this menace to the seaports of other nations; and

"Resolved, 2d—That it is the duty of all governments continuously threatened with invasion of yellow fever from a seaport in which the disease is allowed to persist, to make such representations to the government in possession of the offending seaport as will induce it to adopt the sanitary measures necessary to remove this obstruction to commercial intercourse and menace to human life.

"Resolved, That a copy of these resolutions be transmitted to the executives of the several governments represented in this association."

I quote from an address delivered by myself last month before the Pan-American Medical Association in Mexico, touching up this very live subject:

"I know of no more necessary campaign upon which to enter than one calling for a concentration of forces against yellow fever in the western hemisphere. Cholera no longer inspires its old-time dread. It is now an unmasked enemy, requiring only vigilance, skill and pecuniary resources to overcome it. A lapse in any of these may give it headway, but with these three particulars carefully observed, the conquest of this enemy as soon as it appears is a certainty. The same cannot be said of yellow fever. Its entity is unknown.

"Our duty with regard to it includes (1) an investigation into its exact nature and cause, and (2) an insistence upon sanitary engineering and other sanitary measures which will remove it.

"With regard to scientific investigation, it is hoped that the Congress of the United States will be induced at its next session to initiate a plan providing for continuous labor in this direction."

YELLOW FEVER INVASION OF THE UNITED STATES

Our knowledge of yellow fever is incomplete, but enough is known of the causes which propagate it to enable us to take necessary action to suppress it wherever evident. We know that it is a filth-disease, and that, where permitted to permanently exist, it is an evidence of a want of proper care on the part of public administration. Moreover, it is a disease pre-eminently of seaports. In the annual report of the Marine Hospital Service for 1895 is a table showing the years in which yellow fever has visited the seaport cities of the United States. From 1800 to 1896 there have been only nine years in which the United States has not been visited by yellow fever. Twenty-three visitations, it is proven, came from Havana; twelve were from Cuba (exact port unknown). Since 1862 there have been twenty-six invasions. The source of nineteen of these is positively known, viz.: sixteen from Havana, two from Cuba, one from Honduras.

Since 1893 there has been no yellow fever in the United States, and the records show that the disease, although frequently imported, has never become a fixed habitant of our shores. The same cannot be said of Vera Cruz, Havana, Santiago, Rio or Santos, and history shows that if one of these ports becomes free from the disease it is subject to re-infection from the others.

HAVANA A GREAT AND CONSTANT MENACE

As remarked previously, it is desirable to concentrate our efforts upon one disease—yellow fever. But we may go further and say that it is desirable to still further concentrate them upon one port. It is obvious that the chief offending port on the western continent is Havana. So greatly was I impressed by this fact while compiling the table showing the sources of infection of yellow fever brought to the United States, that it seemed to be a

duty to prepare the following letter, to be used in the nature of a protest by the proper authorities. Following is the letter:

"Washington, D. C., December 4, 1895.

"The Honorable, the Secretary of the Treasury.

"Sir:—I have the honor to submit for your consideration the following statements relating to the island of Cuba and its chief port, Havana, and the jeopardizing relation which the latter in particular constantly bears to the United States by reason of insanitary but remediable conditions, causing it to be a focus of the infection of yellow fever—the most subtle and dangerous of all the epidemic diseases and one which annually threatens the lives and property of a large portion of the United States.

"I transmit herewith a table which I have caused to be prepared for the annual report of the Marine Hospital Service for 1895, showing the years in which yellow fever has visited the cities of the United States, the cities visited and the source of the infection. It will be seen from the table that during the present century, from 1800 to 1894, there have been but seven years in which yellow fever has not visited the United States. The source of the infection is known in only forty-one of the eighty-seven years; in twelve of these forty-one years the source of infection is given as simply the West Indies, which may or may not mean the island of Cuba, but in twenty-three of the years the source is given definitely as Havana. Taking a more limited period—namely, between 1862 and 1894—our shores have been infected with yellow fever twenty-six different years. The source of the infection is known for nineteen, and of these nineteen yearly visitations sixteen have been traced definitely to Havana. The records further show that in some years a number of places in the United States have been infected independently of one another from Havana, as, for example, in 1862, Key West, Florida, and Wilmington, N. C.; in 1871, Cedar Keys, Tampa and New Orleans; and in 1873, New Orleans and Pensacola. The last epidemic of yellow fever in this country—namely, in Brunswick, 1893—was brought on vessels from Havana, and the last great epidemic—namely, in 1878—is traceable to the same source. The epidemic of 1878 invaded 132 towns of the United States and caused a mortality of 15,934 persons, and the pecuniary loss to this country has been stated at the lowest estimate as $100,000,000 in gold. The disease is not indigenous to our soil, but is always imported. So great is the danger of its introduction from Cuba and Havana that it has become a trite saying among sanitary officers that the only absolute safety lies in non-intercourse.

"This subject is by no means a new one. Attention has frequently been called in the reports of the Marine Hospital Service to Havana as a constant menace to the health of the United States, and the subject was one of exhaustive inquiry by the United States Yellow Fever Commission, whose report may be found in the annual report of the National Board of Health for 1880. I quote from this report as follows:

"Page 78—'Cuba, as its prosperity and commerce increased, has become the greatest nursery and camping ground of one of man's most ruthless destroyers. Itself most seriously afflicted, it annually disseminates to other lands, as from a central hell, disease and death.'

"Page 104—'Cuba makes no such efforts to limit the spread of yellow fever as have apparently proved successful in Martinique and others of the

West Indies. * * * Our present knowledge justifies the hope that, if the periods when this tendency to die out was very manifest were utilized in efforts for protection, even Havana might be freed from the poison of yellow fever and require a fresh importation for the renewal of the disease.'

"The harbor of Havana is a cesspool which for years has received the drainage of the city, and is virtually a *cul-de-sac*, with no means of its being scoured by the tides or fresh-water streams. The wharves on the Havana side of the harbor are notorious as foci of infection. An examination of the records of the quarantine stations on the South Atlantic and gulf coasts for the year 1894 shows that there were eleven cases of yellow fever taken from six vessels arriving at the Dry Tortugas quarantine station. All of these vessels came from the wharves in Havana. In the year previous, 1893, at Ship Island, there were five vessels which arrived at the quarantine station having had eight cases of yellow fever on board, and all these yellow fever vessels lay at the wharves in Havana, with the exception of one, which lay very near a vessel which had been at Tallapiedra wharf, and was infected with yellow fever. Two of these wharves—namely, the Tallapiedra and the San José—are particularly dangerous. Under this latter empties the sewer from the military hospital, where the yellow fever patients of the army are treated. It has been said that no vessel has ever been tied to this wharf with a non-immune crew on board without yellow fever appearing among them. So well known is it as a danger point that it is called "dead man's hole" by ships' captains, and so great is the danger of being obliged to tie up to it that captains of American vessels have been known to pay for the privilege of discharging cargos in the open bay on lighters, the payment being made by deduction from freight charges, amounting frequently to $200 or $300. Captains of American vessels have frequently asserted that the United States government should not allow vessels to go to this wharf. The personal danger to the American seamen is increased by reason of the fact that the law compels him to remain on his vessel, even though tied to Tallapiedra wharf in "dead man's hole."

"A description of the sanitary imperfections of Havana may be found in the annual reports of the Marine Hospital Service and in the report of the United States Yellow Fever Commission, previously referred to. I have made an inquiry as to whether any improvements in the conditions have been made in recent years, and the reports received show there have not been. Sanitary Inspector Burgess reports that, while a new water-supply has been provided for Havana, there has been no sewerage to correspond. He states that the few sewers are badly made of pervious material, so uneven in their course and so leaky that the city would be better off without them. It is already being reported that many houses, as also the city generally, are damper than before the new supply of water, and, naturally, this must obtain and increase until some appropriate drainage system is constructed.

"The furnishing of a new supply of water to a city before providing an extra amount of drainage, is sometimes called by sanitarians 'the cart before the horse' procedure. The danger is actually increased by the increased supply of water. The dread caused by this condition of affairs in Cuba, and particularly in Havana, is illustrated by a concise review of the quarantine regulations deemed necessary by local and state, as well as by the national quarantine authorities. Between May and November every vessel from Havana, and most other Cuban ports, arriving at any port in the

United States between Norfolk, Va., and Brownsville, Texas, whether yellow fever has been aboard the vessel or not, is required to discharge ballast at quarantine, to have its hold washed and filled with fumes of sulphur, all the dunnage of the crew and baggage of passengers placed in steam disinfecting chambers, and after completion of disinfection the vessel is then held from three to five days before being allowed to enter port.

"Some exception is made to the above with regard to iron steam vessels bringing passengers, but other specific and stringent requirements are added. Moreover, the regulations forbid absolutely persons not immune to yellow fever to come to Florida from Cuba during this period. By an immune person is meant one who has had yellow fever, or who has resided in a yellow fever locality a period of ten years. This rule, therefore, excludes children under ten years of age, and, notwithstanding that efforts have been made to abrogate this regulation, no health officer dares venture to recommend its abrogation. To carry out this regulation the United States is obliged to maintain two inspectors in Havana in order to give the proper certificates to passengers leaving that port for the United States. All the above entails, in addition to responsibility, large expense.

"I wish, as a sanitary officer, having in view the safety of the United States from visitations of yellow fever, to protest against these conditions so strikingly in contrast with the sanitary enlightenment of the age, and so threatening to the commerce and lives of the people of other countries, and particularly our own. I have respectfully to request that the matter be brought to the attention of the Department of State.

"Respectfully yours,

(Signed) WALTER WYMAN,
Supervising Surgeon-General, M. H. S."

NECESSITY OF PUBLIC SENTIMENT

There are other seaports habitually infected with yellow fever, but it is believed if we will concentrate our energies first upon one, and that one of the most dangerous, we may have greater hope of improving the present conditions; and actual results once obtained will furnish a precedent to aid in effecting like changes in other ports. To this end we must awaken public sentiment—a sentiment that will cause the people to appeal to their respective governments.

The time has come when we should submit no longer to this annual trepidation concerning yellow fever and when the restrictions to commerce caused by infected seaports should be removed. And we should not fail to impress upon others *their* responsibility with regard to this public sentiment. In fact, we may claim as physicians and sanitarians that our work has so far progressed that it is the duty of others to take it up and press it to more practical results.

The dangers have been demonstrated, the causes have been made known, the methods to be adopted have been pointed out. Now, gentlemen of the Exchange, of the Legislature, and you who are skilled in diplomacy, it is time for you to bear a hand. Join your efforts with ours that

commerce may be free, unobstructed by sanitary restraints, and this disease be eliminated from the friendly intercourse of nations. If now, through the higher demands of quarantine and in the interest of commerce, sanitation of seaport cities and of localities which breed disease is enforced, a good beginning will be made toward the sanitation of all cities.

PUBLIC HEALTH SERVICE—DEVELOPED GRADUALLY, OR ESTABLISHED DE NOVO? CONSTITUTIONAL CONSIDERATIONS

The sequence of public health service upon quarantine laws and regulations will be illustrated further on, but, turning for the moment from this consideration, it will be convenient here to discuss the possibility or wisdom of establishing *de novo* a public health service, not developed gradually. It will be found that many of our legislators believe there are limitations to the exercise of health prerogatives by the national government, claiming that these limitations have their corresponding privileges in the rights and constitutions of the several states. The provisions of the constitution of the United States relative to this matter are contained in Section VIII, paragraphs 1 and 3, which I quote as follows:

"Section VIII. The Congress shall have power—

Par. 1. To lay and collect taxes, duties, imposts and excises, to pay the debts and provide for the common defense and general welfare of the United States; but all duties, imposts and excises shall be uniform throughout the United States.

Par. 3. To regulate commerce with foreign nations and among the several states, and with the Indian tribes."

A strict constructionist will inform you that the powers of the national government, pertaining to the public health, are restricted to paragraph 3, which gives the right of Congress to regulate commerce, and, in regulating commerce, Congress may so regulate it as to prevent its being a carrier of disease. Others will claim that under the general welfare clause, in paragraph 1, Congress has the right to legislate for the public health. But the strict constructionists reply that this general welfare clause means to provide for the general welfare, in accordance with the subsequent paragraphs of the same Section, or as elsewhere specified.

Let us assume, however, that the liberal construction is correct, and that under the constitution an absolute health service, with rights and powers in states and municipalities, may be established. Even then the most natural organization would appear to be by a division of labor according to states. Considering the vast territory covered by this government, the different conditions existing in its various portions so widely separated by degrees of latitude and longitude, it would be necessary for any sanitary authority to divide its work into sections, represented preferably by the several states, and the organization would be practically the same as at present.

Again, admitting the right of Congress to establish a service of this character, with full powers over states and municipalities, with regard to municipal and domestic sanitation, involving all details, as house-drainage plumbing, methods of sewerage and disposal of garbage, water-supply, ventilation of dwellings, school houses and other public buildings, examination of milk supply, food and drugs, disposal of the dead, disinfection of dwellings after the ordinary contagious diseases, such as scarlet fever, measles and diphtheria; placarding of houses containing contagious diseases, and so forth—would it be desirable for the national government to have such authority? Would it be cheerfully yielded by state and municipal officers, or by the people? And what would be the effect upon our people other than to cultivate a weak leaning upon the national government in all these matters?

STATE BOARD OF HEALTH

The sanitary welfare of this country is dependent, primarily, upon the development and perfection of the State boards of health. While quarantine is, properly speaking, a national matter, domestic sanitation is a State matter. There should be, and is, a State pride in the development of sanitation, and a self-reliance; an unwillingness to surrender functions, or call for aid from the general government, excepting after clearest convictions of propriety or necessity. As each State has its own militia, its own educational system, its own laws regarding marriage, its own judiciary, so also it should consider the control of health matters affecting its individual citizens, as one of its functions, as important as any of the others which go to make up its autonomy. And it may be remarked that the same cordial and cooperative relations which the States should bear to the U. S. government should exist between the State and its municipalities.

There has been a remarkable growth of State and municipal health organizations within the last twelve years, both in number and in power. Of the forty-five states, thirty-eight have now State boards of health.

These State boards annually meet in national conference for the exchange of information concerning all public-health matters within their respective territories, and their transactions are published. True, greater uniformity of state health laws and regulations is desirable with regard to morbidity and mortuary statistics, registration of births, suppression of disease, practice of medicine, and so forth, but there is no greater variance in these matters than with regard to many others.

PUBLIC HEALTH SERVICE UNDER EXISTING LAWS AND ORGANIZATIONS

Now, with the States and municipalities allowed to attend to their own domestic sanitation, let us see what has been done, and what may be done by the national government in the interest of the public health under existing laws and organization. I have always contended that the Marine Hospital

Service, even when considered solely in the light of its original function—the care of sick and disabled seamen—is a very important element in public health work. The name itself now conveys no adequate idea of its scope; but the Service is very nearly a century old, and its functions have been added to from time to time by Congress to such an extent that it is a somewhat laborious and tiresome task to enumerate all that it is doing. But, in its original restricted capacity, it has by careful selection of its officers, and appointment only after rigid examination, and its entire removal from political influence, established a corps of medical men, under strict discipline, divorced from local influences and made familiar, to a degree unusual among medical men, with correct business habits and the systematic methods upon which is dependent the success of all large organizations and of government itself. It treats annually 53,000 sick and disabled seamen in twenty-one marine hospitals and dispensaries and at eighty-six relief stations, and has an annual fund of between $500,000 and $600,000 for its support. In connection with the hygienic condition of these hospitals, and the scientific treatment of the diseases therein, legally the Service is entitled to make investigations, which, though primarily intended for the benefit of the sailor, actually are more far-reaching in their effect. I will instance the hygienic laboratory of this Service, which was established in 1887, in connection with the marine hospital for the port of New York, and afterwards removed to Washington. There are much finer laboratories, so far as building and conveniences are concerned, but it is doubtful whether any laboratory in the United States is more completely equipped. The most recent scientific appliances are provided for this laboratory and paid, with occasional exception, from the Marine Hospital fund.

Among the investigations legally charged to this fund may be mentioned the work of the Service in connection with diphtheria. An officer of the Service was detailed to go abroad for the purpose of familiarizing himself with serum-therapy, and coincidently the antitoxin discovery being made known, he immediately familiarized himself, under the direct instruction of Roux and Martin, with all the details, and was among the first, if not the first, to give a succinct account in this country of the methods of preparing antitoxin and its use in the treatment of diphtheria. The horse, still in service in the laboratory stable was the second animal to be thus inoculated in this country, the first being one inoculated under the auspices of the Board of Health of New York city. All this was done out of the Marine Hospital fund, and the antitoxin obtained was distributed to the marine hospitals of the United States, while the method was published in the Abstract of Sanitary Reports.

Added to the duties of this Service have been the establishment and maintenance of twelve national quarantine stations, in the perfection of which our knowledge with regard to appliances for scientific disinfection

has been greatly increased. An annual appropriation of $137,000 is made for the maintenance of these stations. In addition to this, Congress has placed upon the Marine Hospital Service the execution of the national quarantine law, with its provision for maritime and interstate quarantine regulations, and for the collection and publication of sanitary reports and statistics.

Again, in emergency, the Marine Hospital Service has the expenditure of the epidemic fund, from which from time to time, either by direction of Congress or by interpretation of the law, special investigations have been and are being made, relating particularly to the prevalence, the causes for dissemination, and the nature of cholera, yellow fever and small-pox.

I know of no better way of illustrating what may be done in the matter of public health under the present laws, and with the increased agency of the Marine Hospital Service, than by giving, as briefly as possible, a summary of the work of the Service during the past year. The summary, which has not yet appeared in print, is now going through the press.

OPERATIONS OF THE MARINE HOSPITAL SERVICE FOR THE FISCAL YEAR ENDED JUNE 30, 1896, WITH CERTAIN ADDITIONAL TRANSACTIONS TO NOVEMBER 1, 1896

During the fiscal year ended June 30, 1896, 53,804 patients were treated, 12,954 in hospital, and 40,850 at the several hospital dispensaries. Aid was given to certain other branches of the government service, as follows: To the life-saving service by examination of 1297 keepers and surfmen as to their physical qualifications, of which number twelve were rejected, and by the examination of applicants for appointment as surfmen, of which number sixty-three were rejected on account of physical defects. Eleven hundred and three pilots were examined with regard to their ability to distinguish color, fifty-eight of whom were rejected on account of color blindness. I will add that since 1880 every pilot employed on a merchant vessel of the United States, whether on the ocean, lakes or rivers, has been examined for color-blindness by an officer of the Service.

At all the chief ports of entry medical officers have been attached to the immigration service for the purpose of medical inspection of arriving immigrants. This is irrespective of quarantine, and is with a view of excluding all immigrants with contagious or loathsome disease in accordance with the immigration law.

Five hundred and eighty-two seamen were examined prior to enlistment in the revenue-cutter service, and twenty-seven rejected. Ten boards of officers were convened during the fiscal year for the physical examination of officers and seamen of the revenue-cutters.

Public Health Service, 1896

Under the head of Public Health Service, the annual report for 1896 contains the history for the year of the four principal epidemic diseases, cholera, yellow fever, small-pox and plague.

Cholera was violently epidemic in Egypt, and the chief concern was lest

it should be carried to the several Mediterranean ports of Europe, particularly Naples, from which port came, during the past season, a large proportion of the immigration to the United States. Arrangements were made for prompt notification should the disease appear in Naples; and by appropriate action through the State Department, a rigid observance was enforced at Alexandria of the treasury regulation prohibiting the shipment of rags from cholera-infected ports to the United States. Attention is called to the responsibility resting upon the government having territorial jurisdiction in the countries where cholera finds its breeding-place, and in the countries subjected to the incursion of this disease through Mohammedan pilgrimages; and by contributed articles the methods are shown by which the spread of this disease may be prevented and its prevalence in its breeding-places be greatly diminished.

Yellow Fever

Under this heading are included reports from the sanitary inspector at Rio de Janeiro, giving the history of the disease in that city, the cause of its continuance,, and showing its ravages particularly among newly-arrived immigrants. The statistical tables shows the continued prevalence of the disease in Cuba, and the constant danger of its extension to the neighboring shores of the United States, particularly from Havana, as set forth at length in a special report.

Small-Pox

Small-pox is reported as having prevailed in twenty-two States, the point of greatest focal activity being the State of Louisiana, where, in New Orleans, it assumed an epidemic form, there being to August 1, 1896, 952 cases and 256 deaths since the first of November last. The epidemic came to an end in the early fall. The Marine Hospital Bureau was called upon to assist in the suppression of this disease, particularly in Arkansas, where, in Crittenton County, a camp was established and other measures taken to prevent the extension of the pest to neighboring states; and in Key West, Fla., where the State health officer was aided in his efforts by the detail of an experienced medical officer of the Marine Hospital Service, who, under direction from the Bureau, established and maintained a detention camp. Aid was also rendered to New Orleans, Mobile and Apalachicola by the general vaccination of the crews of all steamers arriving at those ports.

National Quarantine Administration—Foreign

In the enforcement of the quarantine regulations of the Treasury Department in foreign ports, sanitary inspectors of the Marine Hospital Service were maintained throughout the year at Havana, Santiago de Cuba, Panama, Rio de Janeiro and Yokohama, and during a portion of the year at Honolulu. A full report from the sanitary inspector at Havana gives in detail the extreme care exercised to prevent yellow fever being carried to

the United States. Special precautions were taken with regard to baggage, even during the winter months, the baggage of passengers bound for Florida being critically examined, and if considered at all dangerous, stamped with a label, which called for disinfection at the port of arrival.

Several complaints having been received concerning the incomplete information furnished by the consular bills of health, instructions were issued through the State Department to consular officers, calling their attention to the deficiencies and enjoining upon them a strict compliance with all details of the regulations.

Reports from two United States consuls, one at Havre, France, and the other at Kobe, Japan, are published in full as illustrating the value of intelligent observance of the quarantine regulations of the Treasury Department, which are to be enforced in foreign ports immediately on the appearance of epidemic disease.

Administration of the Treasury Quarantine Regulations at Quarantine Ports of the United States

In the enforcement of the quarantine regulations in United States ports there were thirty-four fines imposed upon vessels entering without the consular bill of health required by the act of February 15, 1893.

Several circular letters containing amendments to and instructions concerning the regulations, were issued, including the following subjects, namely: Notification to be given to State health authorities of the interior, of the departure of immigrants arrived upon vessels upon which contagious disease has appeared: Relapsing fever made a quarantinable disease: Quarantine order requiring at national quarantine stations the disinfection of vessels from suspected latitudes unless specially authorized by the Bureau to give pratique without disinfection: Request made of all State and local quarantines to send weekly reports to the Bureau for publication in the weekly edition of the Public Health Reports, which are transmitted to all quarantine stations, concerning trespass on quarantine anchorage, upon the boarding of vessels by unauthorized persons before inspection; and upon the right to forcible detention of persons in quarantine. The report also gives an account of special measures to prevent the introduction of yellow fever into Key West through Cuban refugees or returning filibusters; also the measures taken to secure the co-operation of the Canadian authorities in enforcing the disinfection of baggage of all Chinese immigrants arriving at ports on the Pacific coast. Included also are contributed articles by experienced quarantine officers of the Service upon the details connected with the management of national quarantine stations, and the interpretation of the quarantine regulations.

Included, also, are reports in detail from each of the twelve national quarantine stations, showing the operation of each station during the year. Also full reports of the inspection of each of the State and local quarantine stations and ports of entry throughout the whole coast of the United States, from Maine to Washington,by seven medical officers, to each of whom a district was assigned.

Relations with State and Local Quarantine Authorities

The relations of the Marine Hospital Service with the State and local authorities have been of an amicable character, although a number of differences of opinion have naturally arisen relative to respective rights and

propriety of procedure. The local authorities, almost without exception, have given their hearty cooperation to the Bureau. At Portland, Maine, the authorities request the government to take possession of the station. At Baltimore, by reason of representations made, the quarantine inspection service is now maintained throughout the year, instead of, as formerly, through the summer and fall months only. At Key West, a steam disinfecting chamber has been provided, as required by the Treasury Regulations, the attention of the authorities having been called to the necessity of this provision. At Apalachicola, a sanitary inspector of the Marine Hospital Service was appointed during the winter months to make the necessary inspection of vessels, the local quarantine having been discontinued, and later the regulation requiring disinfection of vessels from ports infected with yellow fever has been enforced by directing the collector of customs to refuse entry to vessels from said ports, unless provided with the certificates of discharge from a fully-equipped quarantine station. It was found that an attempt was made to disinfect vessels without the proper appliances.

The support of the Bureau was given to the State health officer of Florida in his controversy with the city council of Key West at the time small-pox was epidemic in that city, and pecuniary assistance was rendered the same officer by the establishment and maintenance of a camp for the detention of those who had been exposed to the disease.

The relations of the Marine Hospital Bureau and its representative in New Orleans with the president and quarantine officers of the Board of Health of Louisiana are amicable, but the Board of Health, as shown in the report, objects to federal surveillance as required by the act of Congress of February 15, 1893.

At San Francisco, while the quarantine station on Angel Island has always been under the management of the Marine Hospital Service, the boarding and inspecting of vessels has until recently been carried on by the local quarantine officer. Congress, during the last session, made appropriation for placing the boarding vessel belonging to the Marine Hospital Service in commission, and accordingly the Service is now performing the full quarantine function at this port. Some objection was made at first on the part of the San Francisco Board of Health, but subsequently the same Board transmitted a special request to the Secretary of the Treasury to the effect that the collector of customs be directed to require the quarantine certificate of the national quarantine officer before admitting vessels to entry.

The portion of the report devoted to the quarantine service terminates with a special paper, showing the necessity of a strictly national quarantine service.

Division of Sanitary Reports and Statistics

The editing of the Public Health Reports, issued weekly by the Bureau, has been conducted in this division. A table of mortality statistics for the calendar year 1895 is presented, based upon replies to a circular letter addressed to all cities and towns in the United States having a population, according to the census of 1890, of 1,000 or more. Three thousand, seven hundred and fifteen of these circular letters were sent out, and 1,715 replies received. From these replies the table of mortality statistics of 1,461 cities and towns has been prepared. An inquiry has been begun by circular letter with a view to ascertaining the laws and regulations at present in force in the different states and municipalities to prevent the spread of tuberculosis.

Hygienic Laboratory

In the hygienic laboratory investigations have been continued with regard to diphtheria antitoxin; the etiology, pathology and prophylaxis of pneumonia; and concerning vaccinia and the serum therapy of small-pox. Other subjects of investigation in the laboratory have been: the water-supply of Washington, D. C.; enteric and malarial fevers; the disinfection of the mails, bank-notes, library and school-books; the sanitary condition and disinfection of railway coaches; and a new disinfecting agent, formaldehyd gas, by the use of which the process of all disinfection promises to become simplified.

Other public-health measures conducted by the Service have been an inquiry by circular letter concerning the water-supply and disposal of sewage and garbage of the cities and towns of the United States, the bacteriological study of the water-supply of San Francisco, and a consideration of the prevalence and prevention of the spread of tuberculosis.

The closing portion of the report gives a brief description of the health service of the United States as it now exists, and resolutions passed by certain medical and sanitary associations relative to the enlarging the scope and facilities of the present organization.

WATER POLLUTION

Among other matters now engaging the attention of the Bureau may be mentioned the subject of the pollution of water-supplies, when such pollution affects, or threatens to affect, the sanitary conditon of the people of more than one State. A bill providing for a commission for an investigation of this character has been introduced in Congress, and the following are extracts from an official report showing its necessity:

Official Report

The importance of investigating the pollution of the water-courses and other water-supplies which are of necessity utilized for drinking purposes, cannot be questioned when we consider the enormous number of cases of illness and death which are annually caused by waters which are polluted with sewage and garbage. As time goes on, the situation becomes more and more complex, and is fraught with greater danger by reason of the increase in population and the dependence upon streams as the source of water-supply.

The diseases which are carried by water are cholera, typhoid fever, dysentery, diarrheal diseases, malarial fever, and, exceptionally, diphtheria, glanders and anthrax.

With regard to cholera, its frequent spread through the infection of rivers furnishing the water-supply of cities has been demonstrated in nearly all European countries. With regard to the other diseases mentioned, the literature upon the subject shows that they were carried by streams conveying the specific infection of each disease, but the exact distance to which the specific infection of each disease may be carried has not been determined, nor the exact relation that the sewage bears to the spread of the disease. The quantity of sewage which may render the water of any particular stream unhealthful; the amount of dilution of the sewage, or other treatment thereof, necessary to prevent the lethal contamination of a particular stream; and the effect of sewage pollution upon the seasonal prevalence of disease, are as yet undetermined problems in the United States. It cannot be questioned

at this day that sewage pollution of a water-supply is responsible for the majority of the diseases above mentioned.

With regard to typhoid fever, no subject is attracting the attention of the sanitarians of the United States more widely at present than its spread through polluted water-supply. The prevalence of typhoid fever throughout the United States during the past year has been very marked. During the calendar year 1895 the reports received at the Marine Hospital Bureau show that, of the cities and towns making report to the Bureau, located on the Mississippi river, with a total population of 1,260,143 (census 1890), there were 490 deaths from typhoid fever, and an estimated number of 4,900 cases; that of similar cities and towns on the Ohio river, aggregating a population of 1,141,527, there were 1,980 deaths reported, with an estimated number of 19,800 cases, or in a total population of 2,401,670 of cities reporting on the Ohio and Mississippi rivers, there were 2,470 deaths and an estimated number of 24,700 cases.

On the great lakes the cities of the United States reporting to the Marine Hospital Bureau in 1895, aggregating a population of 2,625,775, reported 188 deaths, with an estimated number of 1,880 cases. It should be remarked that two of the great cities on the lakes (Chicago and Buffalo), aggregating a population of 1,420,000, are not included in the above statistics. These cities failed to send in 1895 the weekly reports from which these statistics are compiled, but in the annual reports for the previous year there were 592 deaths reported, indicating 5,920 cases. Adding these cases and deaths to the totals above, it would give an annual total of 780 deaths and 7,800 cases of typhoid fever in the cities of the United States on the great lakes, aggregating a population of 4,045,755.

From the above statistics it is estimated that every year there are no fewer than 45,000 deaths caused by typhoid fever alone throughout the United States, not to speak of diarrheal diseases, which latter will augment the above number by half, and, based upon an estimated mortality of ten percent, it is within reason to assume a yearly prevalence of 450,000 cases of this disease. To what extent the prevalence of typhoid fever is due to the infection of the rivers and lakes from which cities take their water-supply will be one of the subjects for the investigation. The carrying of this disease from one city or town to another by means of water-courses has been definitely proved both abroad and in the United States, and the presumption is strong that in the Ohio river, taken as an example, which is the sewer and at the same time the source of water-supply for nearly all the cities located upon its banks, this and other diseases are annually disseminated thereby, and it is one of the prime objects of this bill to determine this point accurately.

There are a number of other streams, such as the Mississippi, Merrimac, Connecticut, Potomac, Missouri, the Red River, the Red River of the North, the Columbia and Wabash rivers, the cities on which in different states show a marked prevalence of typhoid fever.

In the event of cholera obtaining a lodgment in the United States this accurate knowledge would be of the utmost importance, for while the conveyance of this disease by water-courses has been demonstrated in European countries, the conditions relating to the amount of sewage, the length of the water-courses, and so forth, are so different in the United States as to absolutely require specific investigation. In other words the conclusions

to be drawn from experiments in foreign countries are not sufficient for the needs of this country.

This subject has long been one of inquiry in England, and the investigations made and conclusions reached have been of inestimable value to a great majority of the cities and towns which were compelled to depend upon streams for their water-supply. The same action has also been taken by the sanitary authorities of France and Germany with equal benefit to their people.

In the United States it is impossible for one State bordering upon a river, even by most stringent laws, to protect the health of its citizens, because it has no jurisdiction over others. As our urban populations are rapidly increasing and the question of supplying this great number of people with a sufficient supply of potable water is becoming more important, it behooves our government to give aid to this by at least pointing out some efficient remedy for this great disturber of the life and happiness of our people. I am informed that fourteen State boards of health, the National Conference of State Boards of Health, and the American Public Health Association have passed resolutions urging an investigation of this character.

TUBERCULOSIS

Tuberculosis is also receiving the attention of the Bureau by an effort to establish an arid region sanitarium for the care of the tuberculous patients of the Marine Hospital Service, thus relieving the hospitals of these contagious diseases and preventing their infecting the forecastles and other places occupied by the crews of vessels. Car sanitation, previously referred to, is another measure in the same direction.

The bill introduced into the House of Representatives by Representative Burton, of Cleveland, and which has been endorsed by the Chamber of Commerce of this city, "To provide for the medical inspection of emigrants at ports of debarkation," is one with which I am in thorough sympathy, and will aid to the extent of my ability.

I have not in the foregoing pages suggested what additional legislation is necessary or desirable to be engrafted upon that already existing, nor have I anywhere stated that there should be or should not be a department of public health, or a bureau of public health. These are matters for further consideration, and which I would not wish to treat of on the present occasion. I have endeavored simply to place various facts before you which I have never seen set forth in consecutive detail, and I do not pretend even to have exhausted this branch of the subject, though I fear the same may not be said with regard to your patience.

In conclusion, Mr. President and gentlemen of the Society, and members of the Chamber of Commerce, who have honored me with your presence, permit me to express my grateful appreciation of the honor conferred by the invitation sent me, and to thank you for your courteous attention. It is a privilege and a pleasure to address a society whose members have shown such active and patriotic interest in matters relating to the medical profession and to public health, in a city whose representative business men manifest a like interest and cordial cooperation with the medical profession.